

Serial No. 10/500,746

Atty. Doc. No. 2002P06190WOUS

Amendments To the Claims:

Please amend the claims as shown.

1-10 (canceled)

11. (currently amended) An optical transmission system, comprising:

a first optical fiber having a first length, and a first dispersion compensation unit and at least, ~~and a first optical signal~~; a second optical fiber having a second length, and a second dispersion compensation unit, ~~and a second optical signal~~;

wherein in transmitting first optical signals at a first data transmission rate the compensating amounts in the first and second units are dimensioned in such a way that the first and second lengths are under compensated by approximately the same under-compensation amount, and

wherein, in transmitting a second optical signal at a second data transmission rate greater than the first data transmission rate, ~~a first data transmission rate at which the first optical signal is transmitted; a second data transmission rate at which the second optical signal is transmitted;~~ and a pre-compensation unit for pre-compensating the second signal is arranged upstream of the first length of optical fiber, for pre-compensating the second optical signal in order to transmit the second optical signal at the second data transmission rate and the pre-compensation unit having a pre-compensation providing a pre-compensation amount of between 0 ps/nm and -2000 ps/nm, -, wherein

the first dispersion compensation unit compensates the first optical signal as the first optical signal is sent to the second dispersion compensation unit and is dimensioned in such a way that the first optical fiber length to the second optical fiber length are respectively under-compensated by approximately the same under-compensation amount.

12. (currently amended) The optical transmission system according to Claim 11, wherein the system is comprised of more than two optical fibers each characterized by having a length and a dispersion compensation unit.

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13. (currently amended) The optical transmission system according to Claim 11, wherein the second data transmission rate can be is at least double the first data transmission rate.

14. (currently amended) The optical transmission system according to Claim 11, wherein the pre-compensation amount is dependent on the size of the launch power of the second optical signal being transmitted at the having a second data transmission rate, and on the type of fiber used for transmission.

15. (currently amended) The optical transmission system according to claim 11 ~~Claims 11~~, wherein the first and second optical fibers are a standard single mode fiber or a non-zero dispersion-shifted fiber.

16. (currently amended) The optical transmission system according to claim 12 ~~Claims 12~~, wherein the optical fibers are a standard single mode fiber or a non-zero dispersion-shifted fiber.

17. (currently amended) The optical transmission system according to Claim 15, wherein the pre-compensation amount for a standard single mode fiber is approximated by the following relation:

$$D_{PC} = (-11 + 1.665 \cdot P_{\text{launch}} / [\text{dBm}]) \cdot D_{\text{inline}} - 270 \text{ [ps/nm]}$$

where

P_{launch} is the launch power of an optical signal being transmitted at the ~~optical signals~~ having the second data transmission rate, per length of optical fiber, and

D_{inline} is the average under-compensation amount of the ~~first to second~~ dispersion compensation units.

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18. (currently amended) The optical transmission system according to Claim 15, wherein the pre-compensation amount for a non-zero dispersion-shifted fiber is approximated by the following equation:

$$D_{PC} = (-12.5 + 1.2 \cdot P_{\text{launch}} / [\text{dBm}]) \cdot D_{\text{inline}} - 25 \text{ [ps/nm]}$$

wherein:

P_{launch} is the launch power of an optical signal being transmitted at the optical signals having the second data transmission rate, per length of optical fiber, and

D_{inline} is the average under-compensation amount of the first to second dispersion compensation units.

19. (previously presented) The optical transmission system according to Claim 15, wherein the under-compensation amount during the transmission of optical signals via a standard single mode fiber is in the range 10 to 80 ps/nm and transmission of optical signals via a non-zero dispersion-shifted fiber is in the range 5 to 60 ps/nm.

20. (previously presented) The optical transmission system according to Claim 12, wherein the lengths of optical fiber in the optical transmission system are between 40 km and 120 km long.

21. (currently amended) The optical transmission system according to one of the Claims 12, wherein an optical fiber and a length of the optical fiber having a dispersion compensation unit form an optical transmission module, and the an optical transmission system comprises ~~consists~~ of a plurality of optical transmission modules arranged in series.

22. (previously presented) The optical transmission system according to Claim 11, wherein the optical transmission system has a bi-directional operating mode.